UNIVERSITY OF EXETER

AMR Network

Internal news and events

AMR Network Events 2020/21

Thank you to Professor Clare Chandler from the London School of Hygiene and Tropical Medicine and to Professor Rich Smith, Deputy PVC of the College of Medicine and Health here at Exeter, for a really interesting “in conversation” event on Wednesday. We are now looking forward to future collaborations and events!

Forthcoming AMR events

We are taking a month off from webinars in May in recognition of the (even more) significant assessment pressures on academic colleagues in that month. There are two events left this academic year, which are detailed below. All events start at 12:15pm and finish by 1:45pm.

Get involved: we are now planning the 2021/22 events schedule. If you are interested in presenting at one of the AMR Network events, or if you would like to chair one of them, please get in touch with us via the AMR-Network@exeter.ac.uk email address. Similarly, if you have any ideas or suggestions for events, please get in touch - we'd love to hear from you.

AMR Network events 2020/21

Thursday 17 June, 12.15pm – GW4 Crucible Project Updates: Interdisciplinary Approaches to AMR

GW4 comprises the Universities of Bath, Bristol, Exeter and Cardiff, and antimicrobial resistance is a major research strand on which the four universities are collaborating. Each year, GW4 Crucible brings together 30 competitively-selected future research leaders and, through a seed funding opportunity, supports a small number of projects. In 2020, the theme was "Interdisciplinary Approaches to AMR" and, of the five projects selected, four were led by a member of the University of Exeter, with several other Exeter ECRs collaborating within those research groups.
Through short presentations, we will hear from some of those involved, including:
• Dr Matt Lloyd Jones: Exploring antibiotic use practices in livestock production through a novel, game-based approach
• Dr Tobias Bergmiller: Developing experimental and theoretical models to study antimicrobial resistance and resilience in polymicrobial biofilms

• Dr Ray Chan: Building a communicative pathway to reduce AMR: a study of cattle farmers' perceptions of on-farm E.coli infections in the UK

The full list of the GW4 Crucible cohort for 2020 is available here. Information on all five seed projects that were funded in 2020, and the researchers involved in each one, can be found here.

Tuesday 20 July, 12.15pm – Interdisciplinary research grant applications

An interactive event in which we will explore some of the challenges and frustrations involved in making interdisciplinary research grant applications, and hopefully hear from some of those who have navigated these funding calls successfully.

If you are able to be one of the contributors and share your reflections and experiences on this, please get in touch via AMR-Network@exeter.ac.uk

Events start at 12.15pm and finish by 1.45pm. If you can only attend part of the webinar, you are still very welcome to come along.

Other internal news and publications

Project focus: Understanding agricultural azole use, its impact on local water bodies and on AMR

Agricultural azoles are a type of chemical fungicides used to protect food crops from a range of fungal diseases. They enable farmers to increase food production by preventing fungal infections and improving crop yield. With increasing food demand, recent years have seen a rise in fungicide use; in 2016, fungicides accounted for 39% of total pesticide use in the UK, most of which were azoles.
Although azole have proven beneficial, over time, they accumulate in soil and water bodies posing ecotoxicological threats to drinking water, food security, aquatic life, and human health. Recent studies have also indicated that agricultural azoles polluting waterbodies may contribute to the emergence of antimicrobial resistant (AMR) fungi. As a result, and due to new UK and EU legislation, farmers are under increased pressure to produce more food using fewer fungicides.

While occurrence and risks of azole antifungals in wastewater and meat industry have been studied, their presence in surface water and potential threats to water quality are underexplored. In this project, we aim to understand the socio-economic and environmental impact of agricultural azoles in local waterbodies. Firstly, we will explore farmers' agricultural and water management practices to protect crops from fungal diseases and understand the wider pressures they face. Secondly, we will quantify commonly used agricultural azoles in surface water associated with farmlands in Devon and Bristol and perform a risk assessment to determine if detected levels of agricultural azoles (if any) contribute to poor water quality and AMR.

Our interdisciplinary team of researchers from University of Exeter, University of Bristol, and Cardiff University will coproduce knowledge alongside farmers to better understand the drivers of fungicide use and collect evidence indicating the current threat posed by farming. The novel combination of

methodologies will provide greater depth to our results, which will then be presented to stakeholders to gather feedback and promote discussion.

University of Exeter researchers involved in this project are: Dr Dhara Malavia, Dr Andrew Jones, Dr Aimee Murray and Dr Ray Chan

If you have project updates or resources that you think might be of interest to other members of the Network, we would be pleased to highlight them through this monthly newsletter – contact us on AMR-Network@exeter.ac.uk

Opportunity to share your AMR research on local radio

A community radio project is looking for researchers to get involved on the theme of health and society. The project is being run by Agile Rabbit, a public engagement organisation that produces quirky events, radio programmes, podcasts, and other experiences, in collaboration with SoundArt radio station, based in Totnes. Researchers will be linked with community members to enable them to have a conversation about meaningful issues in their lives, and this will be broadcast as part of a new radio show. It would involve only a couple of hours of your time, and be a great way to get experience in communicating your work with the public. If you are interested, please contact the project lead Kate Baker (Co-Director of Agile Rabbit: K.Baker2@exeter.ac.uk), or Kelly Thornber (from our AMR network: K.Thornber@exeter.ac.uk).

Publications and other media

As part of the European Centre for Environment and Human Health (ECEHH) 10th anniversary celebrations, listen to Professor Will Gaze in conversation with Hugo Tagholm from Surfers Against Sewage as they reflected on the challenges and successes of water quality research over the past decade.

Professor Krasimira Tsaneva-Atanasova is a co-author of Integrative microbiomics in bronchiectasis, published online in *Nature Medicine*.

Bridget N.J. Watson, Jurre A. Steens, Raymond H.J. Staals, Edze R. Westra and Stineke van Houte have authored "Coevolution between bacterial CRISPR-Cas systems and their bacteriophages", *Cell Host & Microbe* (in press).

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Bruno, M., Kersten S., Bain, J.M., Jaeger, M., Kruppa, M.D., Lowman, D.W., Zuchaom M., Ning Jiao Y. , Chowdhary, A., Renieris, G., van de Veerdonk, F.L., Kullberg, B-J, Giamarellos-Bourboulis, E.J., Hoischen, A., Gow, N.A.R.,. Brown, A.J.P., Meis, J.F., Williams, D.L., Netea, M.G. Host immune

response against the emerging fungal pathogen *Candida auris*: transcriptional and functional insights. *Nature Microbiology*

Kumar, M., Singh, A., Kumari, S., Kumar, P., Wasi, M., Mondal, A.K., Rudramurthy, S.M., Chakrabarti, A., Naseem A. Gaur, N.A., Gow, N.A.R. & Prasad, R. Sphingolipidomics of drug resistant *Candida auris* clinical isolates reveal 2 distinct sphingolipid species signatures. *Biochimica et Biophysica Acta (BBA)* - Molecular and Cell Biology of Lipids. 1866, Issue 1, 158815

Lenardon, M.D. Sood, P., Dorfmueller, H., Brown, A.P.J. & Gow, N.A.R. Scalar nanostructure of the *Candida albicans* cell wall; a molecular, cellular and ultrastructural analysis and interpretation. *The Cell Surface*. 6, 10047.

Bain, J.M. , Alonso, F., Childers, D.S., Walls, C.A., Mackenzie, K., Pradhan, A., Lewis, L.E., Louw, J, Avelar, J.M., Larcombe, D.E., Netea, M.E., , Gow, N.A.R., Brown, G.D., Erwig, L.P. and Brown, A.J.P. Immune cells fold and damage fungal hyphae. *Proceedings of the National Academy of Science USA* 118 No. 15 e2020484118.

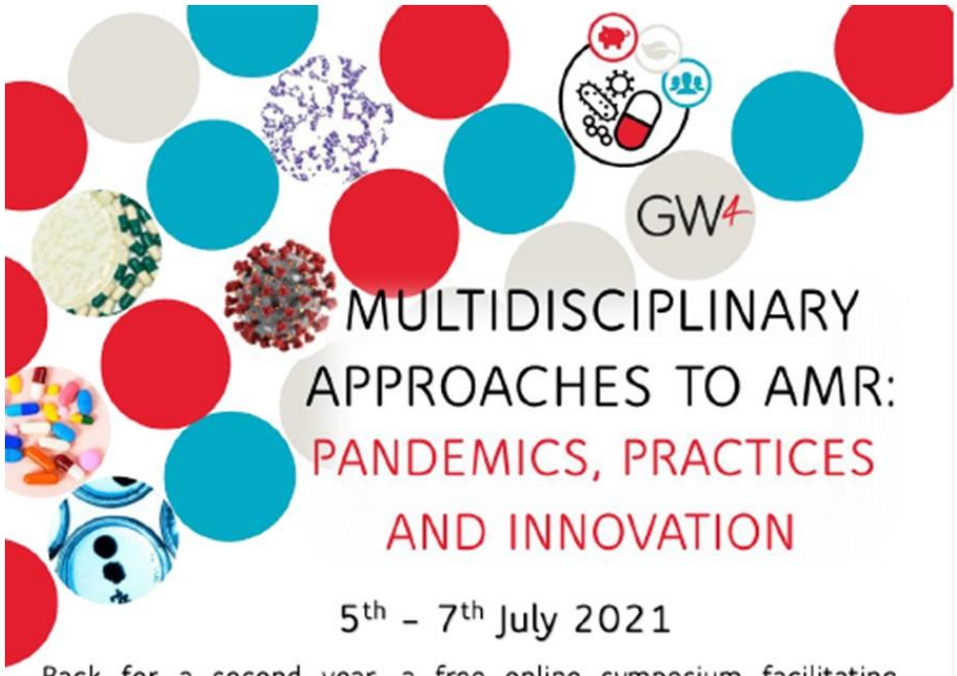
Hussain, K.K., Malavia, D., Johnson, E.M., Littlechild, J., Winlove, C.P., Vollmer, F. & Gow, N.A.R. Biosensors and diagnostics for fungal detection. *Journal of Fungi* 6, 349;

Papon, N., Brown, G.D. & Gow, Neil A.R. Mycobiota dysbiosis: a new nexus in intestinal tumorigenesis. *EMBO Journal* (News and Views)

Dr Michiel Vos: Microbe of the Month: Myxococcus xanthus, *Trends in Microbiology*

Don't forget to use **#ExeterAMR**

GW4 AMR Alliance



GW4

MULTIDISCIPLINARY APPROACHES TO AMR: PANDEMICS, PRACTICES AND INNOVATION

5th – 7th July 2021

Back for a second year, a free online symposium facilitating networking between researchers working across disciplines with an interest in antimicrobial resistance (AMR).

Organised by GW4 early career researchers, this symposium aims to address 'The Lessons learnt from COVID', highlighting how the COVID-19 pandemic has catalysed changes to research, society and public health policy and how these may influence the future of AMR.

Our 3-day event will comprise of online webinars from invited speakers and selected abstracts, panel discussions and an online poster session.

FOR MORE INFORMATION AND DETAILS ON REGISTRATION AND ABSTRACT SUBMISSION, VISIT:
WWW.GW4AMR.WIXSITE.COM/HOME

amrsymposium2021@gw4.ac.uk @GW4_AMR_2021

UNIVERSITY OF BATH · University of BRISTOL · CARDIFF UNIVERSITY PRIFYSGOL CAERDYDD · UNIVERSITY OF EXETER

Launch of the GW4 AMR Alliance – calling all disciplines! From Dr Jane Khawaja, Interim GW4 Director, and Dr Claire Spreadbury, GW4 AMR Alliance Manager

On behalf of the Pro Vice Chancellors (Research) of our four universities, we are delighted and excited to launch the GW4 AMR Alliance - an interdisciplinary initiative. Our vision is to become the UK's leading 'One Health' Antimicrobial Resistance (AMR) research consortium, recognised globally, and to be the partner of choice for future AMR research consortia funding to help mitigate the urgent threat of AMR.

We would like to invite and encourage all investigators, including our Early Career Researchers and postgraduate students working in the AMR or AMR-related research field and those who are not currently working in AMR but think they may have something to offer to this research field, to register to join the Alliance/network. Please join us to connect and collaborate with other investigators and benefit from the AMR Alliance's activities, networking and potential funding opportunities.

How to join
Please sign up here to complete a short online registration form (this link can also be found on the website along with our Privacy Policy).

Formal launch
The GW4 AMR Alliance will hold a formal, externally facing launch this summer with an online symposium showcasing the GW4's AMR research. More details will be sent via the network. Many thanks and we look forward to you joining us.

If you have any queries, please do contact the AMR Alliance team at amr@gw4.ac.uk

Please note: the University of Exeter AMR Network will not pass your details on to GW4 automatically so please do take the time to complete the registration form - thank you

External news and events

Supporting Transnational Research Collaboration on Fungal Drug Resistance
JPIAMR in collaboration with the Israel Ministry of Health 28 April, 2pm-4pm CET
This JPIAMR webinar on fungal drug resistance is aligned with the launch of the broadened JPIAMR Strategic Research and Innovation Agenda and is organised in collaboration with the Israel Ministry of Health. It will combine short lectures by keynote speakers on the most pathogenic fungi, followed by expert panel presentations and discussion. The line-up of international experts includes Professor Sarah Gurr and Professor Elaine Bignell from the University of Exeter. More information, including the online registration form, can be found here.

Public Health Research and Science Conference 2021
Monday 24 – Thursday 27 May 2021; registration deadline Wednesday 19 May
The purpose of this conference is to highlight the science that is enabling effective public health practice and services nationally and globally – and will continue to do so into the future. The conference aims to enable the sharing of good practice through stimulating and engaging presentations and participation. It is aimed at scientists, analysts and public health clinicians in any of

many different and diverse roles, whether very senior or early career. This includes: people working in public health organisations, universities, local authorities and other organisations with an interest in providing or using evidence through robust public health science. More information is available here. **Abstract submission: further and final call closing on Sunday 25 April.**

Publications of interest

Sabiha Essack, The Future of "Omics-Based" Antibiotic Resistance Surveillance Data, British Society for Antimicrobial Chemotherapy (part of the 50th Anniversary expert provocation pieces)

Lauren L. Wind, Jonathan S. Briganti, Anne M. Brown, Timothy P. Neher, Meghan F. Davis, Lisa M. Durso, Tanner Spicer and Stephanie Lansing, Finding What is Inaccessible: Antimicrobial Resistance Language Use among the One Health Domains, *Antibiotics* via AMR Insights

Anh Q Nguyen, Hang P Vu, Luong N Nguyen, Qilin Wang, Steven P Djordevic, Erica Donner, Huabing Yin, Long D Nghiem, Monitoring antibiotic resistance genes in wastewater treatment: Current strategies and future challenges, *Science of the Total Environment* (Science Direct)

Leandro Nascimento Lemos, Alexandre Pedrinho, Ana Tereza Ribeiro de Vasconcelos, Siu Mui Tsai, Lucas William Mendes, Amazon deforestation enriches antibiotic resistance genes, *Soil Biology and Biochemistry* (Science Direct)